

WHAT IS CLAIMED IS:

1        1.        A method of predicting a displacement range of a wire harness,  
2        comprising the steps of:

3                designing a basic route of the wire harness;

4                fixing the wire harness at least two different fixing points on the  
5        basic route;

6                computing a displacement range of the wire harness between the  
7        fixing points, based on a length of the basic route between the fixing points  
8        including a dimensional tolerance, fixing positions and fixing directions of the  
9        wire harness at the fixing points, and a minimum bending radius of the wire  
10       harness; and

11               displaying the displacement range of the wire harness in three  
12       dimensions.

1        2.        The method as set forth in claim 1, wherein the computing step  
2        includes the steps of:

3                computing two predictive routes which satisfy the length of  
4        the basic route, the fixing positions, the fixing directions and the minimum  
5        bending radius, and the two predictive routes being respectively closest to  
6        the fixing points;

7                obtaining a plurality of computing points for computing the  
8        displacement range based on the predictive routes; and

9                computing outermost points of a plurality of predictive  
10       routes which satisfy the route length, the fixing positions, the fixing directions

11 and the minimum bending radius, at each of the plurality of computing  
12 points; and  
13 wherein the display step includes the steps of:  
14 successively connecting the outermost points, which are  
15 close to each other; and  
16 displaying the displacement range as lines connecting the  
17 outermost points.

1 3. The method as set forth in claim 1, further comprising the steps of:  
2 combining the computed displacement range with at least  
3 one of a shape of a fixing portion and an interposition object; and  
4 displaying the combined image in three dimensions.

1 4. The method as set forth in claim 1, wherein the wire harness is  
2 arranged on a door or a body of a vehicle.

1 5. A predicting device for predicting a displacement range of a  
2 pre-designed basic route of a wire harness, comprising:  
3 an input unit, inputting a length of the basic route including a  
4 dimensional tolerance, fixing positions and fixing directions of the wire  
5 harness on at least two different fixing points where the wire harness is fixed  
6 by fixing members, and a minimum bending radius of the wire harness;  
7 a displacement range computing unit, computing the displacement  
8 range of the wire harness between the fixing members, based on the length  
9 of the basic route, the fixing positions, the fixing directions and the minimum

bending radius; and

a display unit, displaying the displacement range in three dimensions.

6. A predicting program for executing a method of predicting a displacement range of a wire harness used in a computer, said program comprising the steps of:

designing a basic route of the wire harness which is fixed at least two different fixing points on the basic route;

computing a displacement range of the wire harness between the fixing points, based on a length of the basic route between the fixing points including a dimensional tolerance, fixing positions and fixing directions of the wire harness at the fixing points, and a minimum bending radius of the wire harness; and

displaying the displacement range of the wire harness in three dimensions.

7. The predicting program as set forth in claim 6, wherein the computing step includes the steps of:

computing two predictive routes which satisfy the length of the basic route, the fixing positions, the fixing directions and the minimum bending radius, and the two predictive routes being respectively closest to the fixing points;

obtaining a plurality of computing points for computing the displacement range based on the predictive routes; and

9                    computing outermost points of a plurality of predictive  
10 routes which satisfy the route length, the fixing positions, the fixing directions  
11 and the minimum bending radius, at each of the plurality of computing  
12 points; and

13                    wherein the display step includes the steps of:

14                    successively connecting the outermost points, which are  
15 close to each other; and

16                    displaying the displacement range as lines connecting the  
17 outermost points.

1        8.        The predicting program as set forth in claim 6, further comprising  
2 the steps of:

3                    combining the computed displacement range with at least  
4 one of a shape of a fixing portion and an interposition object; and

5                    displaying the combined image in three dimensions.